

CLAIMS

1. A process for forming bumps on electrode pads, comprising performing at least the following steps (a) to (d) for a wiring board comprising a substrate and a plurality of electrode pads:

(a) a step of forming a laminated two-layer film on the wiring board and forming a pattern of apertures at positions corresponding to the electrode pads, the laminated two-layer film including a lower layer comprising an alkali-soluble radiation-nonsensitive resin composition and an upper layer comprising a negative radiation-sensitive resin composition;

(b) a step of filling a low-melting metal in the aperture pattern;

(c) a step of reflowing the low-melting metal by pressing or heating to form bumps; and

(d) a step of peeling and removing the laminated two-layer film from the board.

2. The process for forming bumps according to claim 1, wherein the radiation-nonsensitive resin composition contains a compound having a phenolic hydroxyl group.

3. The process for forming bumps according to claim

1 or 2, wherein the negative radiation-sensitive resin composition contains an acrylic resin.

4. The process for forming bumps according to any one
5 of claims 1 to 3, wherein the lower layer of the laminated two-layer film is formed from the radiation-nonsensitive resin composition that is in the form of liquid or dry film.

5. The process for forming bumps according to any one
10 of claims 1 to 3, wherein the upper layer of the laminated two-layer film is formed from the negative radiation-sensitive resin composition that is in the form of liquid or dry film.

6. The process for forming bumps according to any one
15 of claims 1 to 3, wherein the laminated two-layer film comprises a two-layer dry film including the lower and upper layers.

7. The process for forming bumps according to any one
of claims 1 to 6, wherein the step (d) is performed with use
20 of a peeling apparatus having multistage immersion baths and comprises peeling the laminated two-layer film in a first bath containing an organic solvent, followed by cycle filtration of peeled pieces, and peeling the residual laminated film in a second and later baths filled with a peeling solution

containing an organic alkali component.

8. The process for forming bumps according to any one of claims 1 to 6, wherein the step (d) is performed with use
5 of a peeling apparatus having multistage immersion baths and comprises peeling the laminated two-layer film in a first bath containing dimethyl sulfoxide, followed by cycle filtration of peeled pieces, and peeling the residual laminated film in
a second and later baths filled with a peeling solution
10 containing an organic alkali component and dimethyl sulfoxide.

9. The process for forming bumps according to any one of claims 1 to 8, wherein the wiring board comprises a substrate comprising silicon wafer, and a plurality of electrode pads
15 provided on a surface of the substrate.

10. The process for forming bumps according to any one of claims 1 to 8, wherein the wiring board comprises a substrate comprising silicon wafer, a plurality of electrode pads
20 provided on a surface of the substrate, and a passivation film formed so as to embed the side surfaces and end surfaces of the electrode pads.

11. The process for forming bumps according to any one

of claims 1 to 8, wherein the wiring board comprises a substrate comprising glass epoxy resin or bismaleimide-triadine resin, and a plurality of electrode pads.

5 12. The process for forming bumps according to any one
of claims 1 to 8, wherein the wiring board comprises a substrate
comprising glass epoxy resin or bismaleimide-triadine resin,
an insulating resin interlayer and a conductive circuit formed
on the substrate, and a plurality of electrode pads provided
10 on the conductive circuit.

 13. The process for forming bumps according to any one
of claims 1 to 12, wherein the low-melting metal is solder.